

C-5 RELIABILITY ENHANCEMENT AND RE-ENGINEERING PROGRAM (RERP)



The current C-5 fleet operates throughout the Active, Reserve, and National Guard components in various missions and environments. C-5 missions include strategic airlift, emergency aeromedical evacuation, airland transport of a brigade-size force in conjunction with other organic aircraft, transport of outsize and oversize cargo, and multi-ship Special Operations Low Level II. The C-5 aircraft must perform missions at night and in adverse weather, and it may employ aerial refueling during intercontinental missions.

BACKGROUND INFORMATION

The C-5 Reliability Enhancement and Re-engining Program (RERP) upgrades the aircraft propulsion system. It integrates commercial engines, nacelles, thrust reversers, and pylons into the existing C-5 airframe. These performance improvements are designed to optimize cargo carrying capabilities, allowing fully loaded take-offs and landings on relatively short runways, and meet the performance requirements of the Global Air Traffic Management initiative. Additionally, re-engining is expected to provide significant reliability, maintainability and availability improvements. A commercial engine support concept (two levels of maintenance, warranties, power by the hour, etc.) will be integrated into the C-5 logistics support system infrastructure. Other candidate sub-systems for reliability enhancement include the flight controls, hydraulics, environmental, electrical, and fuel systems. Specific upgrades and the extent of the expected reliability improvement will be identified from recently completed trade studies.

The C-5 was developed and procured prior to the implementation of LFT&E statutory requirements. Therefore, the basic aircraft has never completed a live fire evaluation. The RERP modification is an ACAT I program, and constitutes a covered program for LFT&E.

TEST & EVALUATION ACTIVITY

The C-5 RERP TEMP was approved October 2001 in support of a Milestone B decision. No testing has been conducted to date. Only preliminary test planning has occurred thus far. DOT&E has been an active participant in the development of the TEMP, in the review and revision of the acquisition strategy, and in the DoD IPT process.

LFT&E activity has focused on identifying potential LFT&E issues, developing an LFT&E strategy, and updating the TEMP to incorporate LFT&E requirements. To support the LFT&E strategy, the Air Force is conducting modeling and simulation to evaluate C-5 survivability against man-portable air defense systems (MANPADS). Several models are being used, namely, FASTGEN (Fast Shotline Generator), COVART (Computation Of Vulnerable Area and Repair Time), MOSAIC (Modeling System for Advanced Investigation of Countermeasures), SPIRITS (Spectral and In-band Radiometric Imaging of Targets and Scenes), and FISTA (Flying IR Signatures Technology Aircraft). DOT&E has supported a request for a waiver from full-up, system-level testing since testing a complete, combat configured system would be unreasonably expensive and impractical. The LFT&E plan was approved in October 2001.

TEST & EVALUATION ASSESSMENT

The schedule risk for the C-5 RERP development and test programs is moderate to high. The C-5 RERP test program is dependent on the success of the C-5 Aircraft Modernization Program (AMP), which is avionics and software intensive. Any slip in the C-5 AMP program schedule will impact the schedule of the C-5 RERP since the single engineering and manufacturing development aircraft will be a modified C-5B from the C-5 (AMP) test program. The current acquisition strategy will modify four C-5B aircraft for system development and demonstration. A single C-5A Manufacture and Qualification Test program, if approved, will commence in FY09.